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**Court of Customs and Patent Appeals****In re Payne, Durden, and Weiden**

No. 77-522

Decided Sept. 13, 1979

**PATENTS****1. Patentability — Composition of matter (§51.30)****Patentability — Evidence of — In general (§51.451)****Patentability — Invention — Specific cases — Chemical (§51.5093)**

Obviousness rejection based on similarity in chemical structure and function entails motivation of one skilled in art to make claimed compound, in expectation that compounds similar in structure will have similar properties; when prior art compounds essentially "bracketing" claimed compounds in structural similarity are all well known as pesticides, one of ordinary skill in art would clearly be motivated to make those claimed compounds in searching for new pesticides.

**2. Patentability — Composition of matter (§51.30)****Patentability — Evidence of — In general (§51.451)****Patentability — Invention — Specific cases — Chemical (§51.5093)**

Name used to designate relationship between related compounds is not necessarily controlling; it is closeness of that relationship which is indicative of obviousness or nonobviousness of new compound; similarity in chemical structures and properties between prior art and claimed compounds is sufficiently close to support *prima facie* case of obviousness where only structural difference is that ring structures of prior art have one or three carbon atoms between two sulfur atoms, while ring structures of claimed compounds have two carbon atoms between two sulfur atoms, with one of intervening carbon atoms being part of carbamoyloximino moiety in each case, so that ring structures of prior art are balanced, with each sulfur atom linked either directly to carbamoyloximino moiety or linked to it through one carbon atom, whereas ring structures of claimed compounds are unbalanced, with one sulfur atom linked directly to carbamoyloximino moiety and other sulfur atom linked to it through one carbon atom.

**3. Patentability — Invention — Specific cases — Chemical (§51.5093)**

Theoretical differences in oxidation states of two ring sulfur atoms and carbamoyloximino carbon atom of claimed compounds having pesticidal activity from those of prior art that discloses two classes of related compounds, one with single oximino substituted carbon atom between two ring sulfur atoms and other with three intermediate carbons, with oxidation states of substituted carbon atoms and ring sulfur atoms being clearly different in the two classes of compounds and yet both being known to exhibit pesticidal activity, do not defeat obviousness.

**4. Patentability — Composition of matter (§51.30)****Patentability — Invention — Specific cases — Chemical (§51.5093)**

Burden of applicant who is attacking conclusion of structural obviousness, pointing to theoretical differences in oxidation states of sulfur and carbon atoms of his claimed compounds from those of prior art, is not merely to point out that differences in oxidation state exist, but to show that oxidation states of atoms in his compounds were different from what prior art would have suggested.

**5. Patentability — Anticipation — In general (§51.201)****Patentability — Composition of matter (§51.30)****Patentability — Evidence of — In general (§51.451)****Patentability — Invention — Specific cases — Chemical (§51.5093)**

References relied upon to support rejection under 35 U.S.C. 103 must provide enabling disclosure, that is, they must place claimed invention in public's possession; invention is not "possessed" absent some known or obvious way to make it; hence, presumption of obviousness based on close structural similarity is overcome where prior art does not disclose or render obvious method for making claimed compound; it can be assumed that method disclosed for making reference compound would provide those skilled in art with method for making structurally similar claimed compounds; however, Patent Office can properly rely on additional references; moreover, method suggested by prior art need not be that disclosed by applicant.

**6. Patentability — Composition of matter (§51.30)****Patentability — Invention — Specific cases — Chemical (§51.5093)**

Use of new starting material or obtaining of new resultant compound is never alone

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sufficient to render unobvious a method otherwise analogous to that of prior art.

**7. Patentability — Composition of matter (§51.30)**

**Patentability — Invention — Specific cases — Chemical (§51.5093)**

**Pleading and practice in Patent Office — In general (§54.1)**

**Pleading and practice in Patent Office — Rejections (§54.7)**

Patent Office met its burden of establishing prima facie case of enablement where prior art sufficiently suggests analogy to place within public's possession method for making claimed compounds; this shifts burden to applicant to present "reason or authority for believing" that examiner's analogies would be inoperable.

**8. Affidavits — Distinguishing from references (§12.7)**

**Evidence — Expert testimony (§36.10)**

**Evidence — Weight and credibility (§36.40)**

**Patentability — Composition of matter (§51.30)**

**Patentability — Evidence of — In general (§51.451)**

**Pleading and practice in Patent Office — Evidence (§54.5)**

**Pleading and practice in Patent Office — Rejections (§54.7)**

Arguments of counsel unsupported by competent factual evidence of record are entitled to little weight; it is incumbent upon applicant to introduce affidavits or other factual evidence in support of his position, to successfully rebut examiner's prima facie case of enablement; facts, such as test data demonstrating inoperativeness of prior art analogy, or facts set forth in Patent Rule 132 affidavit of expert in field suggesting inoperativeness, are highly probative; examiner's prima facie case of enablement must stand, where applicant has presented no such evidence.

**9. Patentability — Composition of matter (§51.30)**

**Patentability — Evidence of — In general (§51.451)**

**Patentability — Evidence of — Comparison with allowed claims or patents (§51.457)**

**Patentability — Invention — Specific cases — Chemical (§51.5093)**

**Pleading and practice in Patent Office — Rejections (§54.7)**

Prima facie case of obviousness based on structural similarity is rebuttable by proof that claimed compounds possess unexpectedly advantageous or superior properties; direct or indirect comparative testing between claimed compounds and closest prior art may be necessary; applicant need not test compounds taught in each and every reference; however, where applicant tests less than all cited compounds, test must be sufficient to permit conclusion respecting relative effectiveness of applicant's claimed compounds and compounds of closest prior art.

**10. Patentability — Evidence of — In general (§51.451)**

Applicant's evidence of nonobviousness that is not commensurate in scope with its claims cannot overcome rejection of those claims.

**11. Patentability — Composition of matter (§51.30)**

**Patentability — Evidence of — In general (§51.451)**

**Patentability — Invention — Specific cases — Chemical (§51.5093)**

Finding of obviousness is not precluded when only some, but not all, of claimed compound's properties are predictable from prior art.

**12. Patentability — Evidence of — In general (§51.451)**

**Patentability — Evidence of — Comparison with allowed claims or patents (§51.457)**

Board of Appeals' statement that tables of affidavit that reflect comparative testing between applicant's claimed compounds and one compound taught by prior art were "of no evidentiary value for purposes of rebutting the \* \* \* prima facie case of obviousness" must be interpreted as indicating that that relevant evidence was entitled to very little weight in view of closer prior art cited.

**13. Patentability — Composition of matter (§51.30)**

**Patentability — Evidence of — In general (§51.451)**

**Patentability — Evidence of — Comparison with allowed claims or patents (§51.457)**

Applicant may not rely on his mere assertion that one piece of prior art that does not

render claimed compound having pesticidal activity obvious as it did not prove superior in activity against certain pests is "representative and superior in pesticidal properties" to compounds described in other pieces of prior art where none of these allegedly inferior prior art compounds were tested.

#### Particular patents — Pesticidal Compositions

Payne, Durden, and Weiden, Pesticidal Compositions, rejection of claims 1-12 affirmed.

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of Linwood K. Payne, Jr., deceased, by Betty Lou Payne, Executrix, John A. Durden, Jr., and Mathias H. J. Weiden, Serial No. 254,271, filed May 17, 1972. From decision rejecting claims 1-12, applicants appeal. Affirmed.

Robert C. Brown and Aldo J. Cozzi, both of New York, N.Y. (James C. Arvantes, Arlington, Va., of counsel) for appellants.

Joseph F. Nakamura (Gerald H. Bjorge, of counsel) for Commissioner of Patents and Trademarks.

Before Markey, Chief Judge, Rich, Baldwin, and Miller, Associate Judges, and Re,\* Chief Judge.

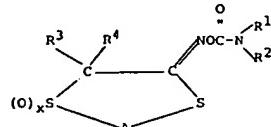
Markey, Chief Judge.

Payne et al. (Payne) appeal from the decision of the Patent and Trademark Office (PTO) Board of Appeals (board) sustaining the rejection under 35 USC 103 of claims 1-12 of application serial No. 254,271, filed May 17, 1972, for "Pesticidal Compositions." We affirm.

#### The Invention

Payne invented five, six, and seven member heterocyclic carbamoyloximino compounds having pesticidal activity. The claims on appeal are:

1. As new compositions of matter compounds having the structural formula:



wherein:

\* The Honorable Edward D. Re, United States Customs Court, sitting by designation.

R<sup>1</sup> is hydrogen or alkyl having from 1 to 4 carbon atoms;

R<sup>2</sup> is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, halogen substituted lower alkyl, lower alkoxyalkyl, lower alkylthioalkyl, lower alkoxy, phenyl, lower alkyl substituted phenyl, lower phenyl alkyl or halogen substituted phenyl;

R<sup>1</sup> and R<sup>4</sup> may be the same or different and are hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkenyl having from 2 to 6 carbon atoms, halogen substituted alkyl having from 1 to 6 carbon atoms, alkoxyalkyl having a total of from 2 to 6 carbon atoms, alkylthioalkyl having a total of 2 to 6 carbon atoms, phenyl, lower alkylphenyl, halogen substituted phenyl, or lower alkoxyphenyl;

A is methylene, ethylene, propylene, ethenylene, propenylene or methylene, ethylene, propylene, ethenylene or propenylene substituted with one or more alkyl groups having from 1 to 3 carbon atoms; and

x is 0, 1 or 2.

2. Compositions as claimed in claim 1 wherein A is methylene.

3. Compositions as claimed in claim 1, wherein A is ethylene.

4. Compositions as claimed in claim 1 wherein A is propylene.

5. Compositions as claimed in claim 1 wherein R<sup>1</sup> is hydrogen and R<sup>2</sup> is methyl.

6. 5,5-Dimethyl-4-(methylcarbamoyloximino)-1,3-dithiolane.

7. 2-(Carbamoyloximino)-1,4-dithiane.

8. 2-(Methylcarbamoyloximino)-1,-4-dithiane.

9. 3-Methyl-2-(methylcarbamoyloximino)-1, 4-dithiane.

10. 3,3-Dimethyl-2-(methylcarbamoyloximino)-1, 4-dithiane.

11. 2-(Methylcarbamoyloximino)-4-oxo-1, 4-dithiane.

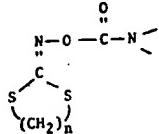
12. 3,3-Dimethyl-2-(methylcarbamoyloximino)-1, 4-dithiene-5.

#### The Rejection — Structure and Properties

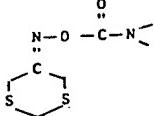
The principal references relied upon by the examiner were:

Addor (Addor I)	3,193,561	July 6, 1965
Addor (Addor II)	3,365,361	January 23, 1968
Addor (Addor III)	3,467,672	September 16, 1969
Ghosh et al. (Ghosh)	3,661,930	May 9, 1972
Nikles	3,678,075	July 18, 1972

Addor I discloses pesticidal compounds with five or six member heterocyclic rings containing two sulfur atoms and a carbamoyloximino moiety, as exemplified by the general structure:

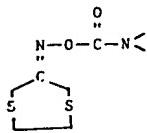


Addor II discloses a group of pesticides, all with six member heterocyclic rings containing two sulfur atoms and a carbamoyloximino moiety, having the structure:



Addor III discloses pesticides structurally identical to the Addor I five-membered ring compounds except that the ring is unsaturated.

Ghosh discloses pesticidal compounds with seven member heterocyclic rings containing two sulfur atoms and a carbamoyloximino moiety, as exemplified by the structure:



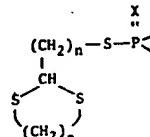
Nikles discloses pesticides structurally identical to the Addor I five-membered ring compounds except that an alkenyl substituent is attached to the ring.

The claimed compounds differ from the primary reference compounds only in the sulfur-carbamoyloximino moiety linkage. In the claimed compounds, one sulfur is linked directly to the carbamoyloximino moiety and the other sulfur is linked directly to an intervening carbon atom, which is in turn linked directly to the carbamoyloximino moiety. In the primary references, both sulfur atoms are linked directly either to the carbamoyloximino moiety (Addor I; Addor III; Nikles) or to intervening carbon atoms which are in turn linked directly to the carbamoyloximino moiety (Addor II; Ghosh).

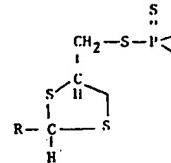
The secondary references were:

Walsh	3,564,013	February 16, 1971
Japanese patent	40-2073	February 3, 1965
Haubein	2,766,166	October 9, 1956
German patent	1,203,797	October 28, 1965

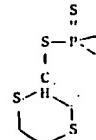
Walsh discloses pesticidal phosphonated heterocyclic mercaptal compounds, exemplified by the structure:



The Japanese patent discloses pesticidal dithiophosphate compounds, exemplified by the structure:

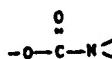


Haubein discloses pesticidal dithiophosphate compounds having the structural formula:

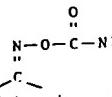


The secondary references were cited for their disclosure that phosphonated dithiacycloalkanes exhibit pesticidal activity when substituted at any ring position. The examiner related the principal references, showing of carbamoyloximino substituted<sup>2</sup> dithiacycloalkanes as pesticides with the Walsh, Haubein, and Japanese patent suggestion "that the carbamoyloximino group may equivalently substitute any position on the heterocyclic ring." The German

Only Haubein and the Japanese patent disclose ring structures like those of Payne's compounds, i.e., ring structures with same positions of the two sulfur atoms relative to the most significantly substituted carbon atom. However, neither discloses carbamate compounds, i.e., compounds containing the radical:



The moiety properly described as "carbamoyloximino" can be represented by the structural formula:



Because the initial carbon of the moiety is also one of the ring carbons, it is not correct to describe this moiety as a ring substituent in either Payne's compounds or those of the principal references.

patent was cited for its teaching that the sulfur atom in thiacycloalkane pesticides may be equivalently oxidized.

The examiner rejected claims 1-11 as obvious in view of each of Addor I, Addor II, and Ghosh; claims 1-5 as obvious in view of Nikles; claims 1 and 12 as obvious in view of Addor III; and all claims as obvious in view of Addor I, Addor II, Ghosh, Addor III, and Nikles in view of Walsh, Haubein, the Japanese patent, and the German patent.<sup>3</sup> The fundamental basis for each rejection was that the claimed compounds are position isomers or methylene ring homologs of the compounds of the principal references,

having a close structural similarity to, and a community of properties with, the principal reference compounds.

Payne presented the affidavit of co-inventor Durden,<sup>4</sup> Table I of which allegedly illustrates lack of structural obviousness in differences between the oxidation states of the two sulfur atoms in the claimed compounds and the oxidation states of the two sulphur atoms in prior art compounds. Table II purportedly establishes an unexpectedly superior scope and level of pesticidal activity of the claimed compounds in a comparison of "the most representative compound of Addor I" with four of Payne's compounds:

TABLE II

	Compound	Insect Toxicity (LD <sub>50</sub> , ppm)				
		Aphid	Whtc	Armyworm	Bean Beetle	Housefly
ADDOR-1		~1	90	160	230	0.7
APPLICANTS-1		5	6	53	35	4
APPLICANTS-2		4	6	60	11	4
APPLICANTS-3		65	55	100	28	41
APPLICANTS-4		6	2	16	23	4

Table III presents insect toxicity data for four compounds said to be closely related to the Addor II compounds by virtue of the sulfur atoms and oximino-substituted carbon

atoms having the same oxidation states.<sup>5</sup> Durden concluded from Table III that the Addor II compounds, and the Ghosh compounds (homologs of the Addor II compounds), were ineffective pesticides except for limited activity against aphid and housefly. Table V,<sup>6</sup> comparing two of Payne's compounds with their "linear or aliphatic analogs" and reflecting erratic activity of linear compounds and their inactivity against armyworm, is said to illustrate unique broad spectrum activity in the claimed compounds:

<sup>3</sup> Payne presented a second Durden affidavit stating only that the test results of the first were obtained by spray test procedures described in Payne's specification.

<sup>4</sup> "LD<sub>50</sub>, (ppm)" represents the number of parts per million (ppm) of test solution needed to achieve a 50% kill.

<sup>5</sup> Durden said he could not make direct comparison tests of Addor II compounds due to unavailability of materials.

<sup>6</sup> Table IV relates only to the Jones et al. reference. See note 3 supra.

<sup>3</sup> The board disagreed with the examiner's contention that a Jones et al. reference suggested the pesticidal activity of a thiolane ring alone.

TABLE V

	Compound	Insect Toxicity (LD <sub>50</sub> , ppm)				
		Aphid	Mite	Armyworm	Bean Beetle	Housefly
Aldicarb		4	15	500	70	4
L-1		15	500	500	50	500
L-2		25	50	500	50	100
Applicants-4		4	2	16	23	4
Applicants-5		0.8	4	140	80	12

The examiner found Durden's affidavit insufficient:

The test results reported in Table II of the first Durden Affidavit cannot be seen to establish the unobviousness of the presently claimed compounds over Addor I. The Addor I compounds are superior to the closest structurally related compounds of the present invention, designated as Applicants-1, Applicants-2, Applicants-3 and Applicants-4, in their effect on aphids and houseflies, i.e., the claimed compounds required applications of from 4 to 65 times greater than the Addor I compound to effect the same kill. Although Applicants-1, Applicants-2, Applicants-3 and Applicants-4 do show a greater toxicity against mites, armyworms and bean beetles, it is noted that there is as much or greater difference observed among the compounds of the present application as there is between the compounds of the present application and Addor I. Note the greater differences in toxicity between the homologous compounds Applicants-3 and Applicants-4 as compared to the lesser differences in toxicity between the Applicants-3 and the isomeric compound of Addor I. Such wide variation of toxicities cannot be seen to establish the unobviousness of the presently claimed compounds as a whole over the Addor I compounds.

No information has been presented comparing the claimed compounds with those of Addor II, Ghosh, Addor III or Nikles and the present claims thus remain validly rejected thereover.

The results reported in Tables III through V of the first Durden Affidavit do not compare the claimed compounds with compounds of the references of record in this rejection and garner Appellants nothing in their attempt to demonstrate patentability over the prior art.

#### *The Board*

The board agreed with the examiner that the claimed compounds would have been *prima facie* obvious from either their close structural similarity to prior art pesticides or from the combination therewith of the secondary references teaching that dithiacycloalkane pesticidal compounds may be substituted at any ring position, albeit with a different substituent.

In response to Payne's challenge to the examiner's conclusion of structural obviousness the board stated:

The challenge is based on an allegation that the claimed compounds are not true isomers or homologs of prior art compounds since the oxidation states of the oximino substituted carbon atom and the ring sulfur atoms are different in the prior art compounds. It is urged that, in the absence of such a true isomeric or homologous relationship, the legal conclusion of structural obviousness is unwarranted. In our opinion, it is reasonably well settled that the name given to the relationship between two compounds is not important. It is the closeness of the relationship which is dispositive of the question of obviousness

\* \* \*

Here, the prior art discloses two classes of related compounds, one with a single oximino substituted carbon atom between the two ring sulfur atoms and the other with three intermediate carbons. The oxidation states of the substituted carbon atoms and the ring sulfur atoms are clearly different in the two classes of compounds yet both are known to exhibit pesticidal activity. We believe that the Examiner has correctly applied the standard of 35 U.S.C. 103 in finding the structural relationship between the claimed compounds and the \*\*\* prior art compounds \*\*\* to be so close that the former would be *prima facie* obvious over the latter. Compounds on both sides of the claimed compounds are known to have similar utilities as pesticides despite the theoretical structural differences noted by appellants and we conclude that the recognition of similar differences between the claimed compounds and the prior art would not have deterred the routineer from making and using the claimed compounds in accordance with techniques suggested by the references relied upon in the rejections.

The board found the Durden affidavit insufficient:

At the outset, we note that Table I, dealing with an alleged difference in oxidation states between the claimed compounds and those of the prior art, is irrelevant once the threshold question of *prima facie* obviousness has been determined (see discussion above). There is no demonstrated relationship between the noted differences in oxidation state and insecticidal activity.

Table II provides the only valid comparison of the claimed compounds and those of the prior art. Only one of the Ad-dor I compounds is tested and the comparative results are inconclusive. Appellants' compounds are sometimes better and sometimes worse than the prior art. In our opinion, one skilled in the art would expect *some* differences in insecticidal effect. Although the affidavit shows that the compared compounds have *different* insecticidal properties, we are not persuaded that the difference would have been *unexpected*.

Finally, we agree with the Examiner that the comparisons of Tables III through V are of no evidentiary value for purposes of rebutting the above-noted *prima facie* case of obviousness. The unreliability of the attempted comparison is exemplified by the inconsistency between Table III and the teachings of Ghosh et

al. at Table II wherein the methylene homolog of the compound purportedly exemplified by appellants' comparison A is shown to be very effective against aphid (*Aphis fabae*) yet the substituted comparison is said to be totally ineffective against aphid. The compared compounds are simply not close enough to those of the references relied upon to be probative of unobviousness.

#### Remand — Procedure

After Payne filed an appeal to this court, the solicitor moved to remand. By an order of August 10, 1977, the court stayed proceedings "for the specific purpose of considering the issue of nonenablement of the prior art." The board then remanded the case to the examiner for a search and report on that issue. On September 13, 1977, the examiner submitted to the board a Supplementary Examiner's Answer stating that the prior art contains an enabling disclosure.

Following a further stay by this court and an extension by the board of Payne's time to respond until October 19, 1977, Payne filed with the board a Supplemental Reply Brief on October 18, 1977. The board remanded to the examiner on November 29, 1977 for consideration of Payne's Reply Brief. The examiner responded on April 3, 1978, with an Examiner's Answer on Remand.

Payne apparently elected to rely upon the Supplemental Reply Brief, and so informed the board's clerk during a telephone inquiry on May 11, 1978. On May 22, 1978, however, Payne filed a Reply to the Examiner's Answer on Remand. In a decision of May 23, 1978, the board stated:

The Examiner's last paper is a clear and complete exposition of the manner in which the prior art provides the necessary enablement. Inasmuch as appellants do not contest the reasoning advanced by the Examiner, and we do not perceive any error in that reasoning, we hold that the enablement requirement has been satisfied, thus serving the purpose of the remand.

On June 12, 1978, the board advised that Payne's paper of May 22, 1978 did not reach the board until June 8, 1978 and would not be considered.

On June 22, 1978, Payne filed a Request for Reconsideration of the board's May 23, 1978 decision. Denying Payne's request, the board refused to treat Payne's Supplemental Reply Brief of October 18, 1977, as a traverse of the Examiner's Answer on Remand of April 3, 1978, and refused to con-

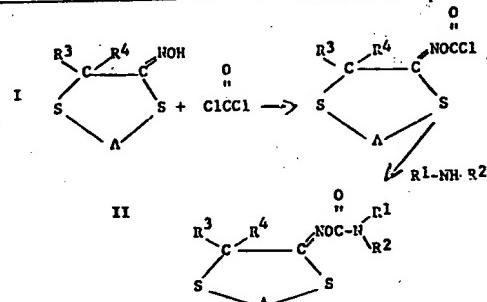
sider the points it had refused to consider in Payne's paper of May 22, 1978. Payne renewed the appeal in this court.

The issue of prior art enablement is inherent in the determination of obviousness and constituted the basis for the remand and for the stay issued by this court. Hence

that issue is fully treated on this appeal, the board's original decision and that on remand being considered as one.

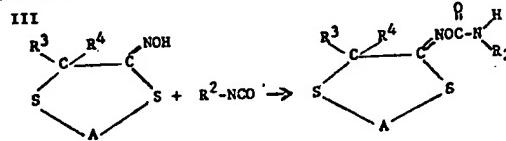
#### *On Remand — Prior Art Enablement*

Payne's specification discloses this general reaction scheme for preparing the claimed compounds:



where A, R<sup>1</sup>, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined [in claim 1] above.

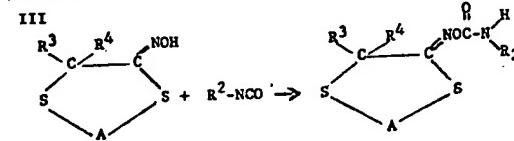
The compositions of this invention where R<sup>1</sup> is hydrogen can also be



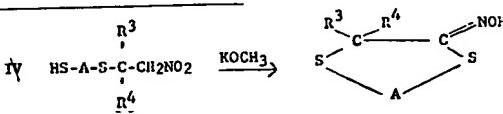
where A, R<sup>2</sup>, R<sup>3</sup> and R<sup>4</sup> are as defined above.

The oxime precursors can be prepared in various ways for example, oximino

prepared by reacting the appropriate oxime precursor with an isocyanate in accordance with the following general reaction scheme:

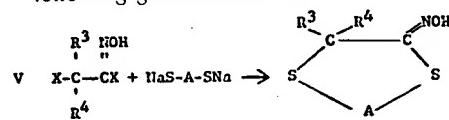


dithiane compositions can be prepared in accordance with the following general reaction scheme:



where A, R<sup>1</sup> and R<sup>2</sup> are as defined above.

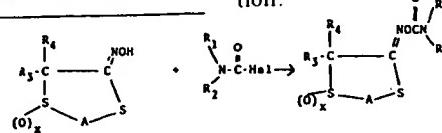
Alternatively, the oximino dithiane compositions can be prepared by the following general reaction:



where A, R<sup>3</sup> and R<sup>4</sup> are as defined above and X is chloro or bromo.

In advancing the view that one of ordinary skill would have been aware of a

method for producing the claimed compounds, the examiner proposed three procedures, each concluding with this reaction:



The examiner's reaction step is essentially that disclosed by Addor I, Addor II, Ghosh, and Nikles. The examiner's three procedures, all directed to producing the oxime intermediate<sup>\*</sup> required for the above final reaction, were constructed from these references:

#### U.S. Patents

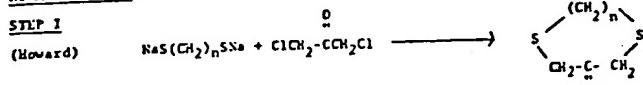
Miller et al. (Miller)	3,209,012	September 28, 1965
Addor (Addor IV)	3,317,562	May 2, 1967
Brace	3,172,910	March 9, 1965
Metivier (Metivier I)	2,943,974	July 5, 1960
Metivier et al. (Metivier II)	3,327,025	June 20, 1967
Esclamadon	3,673,260	June 27, 1972

- Articles
- Howard et al. (Howard), 82 J. Am. Chem. Soc'y. 158-64 (1960)
  - Williamson et al. (Williamson), 31 J. Natl. Cancer Inst. 273-96 (1963).
  - Ford et al. (Ford), 70 J. Am. Chem. Soc'y 3522-23 (1948)
  - Voronkina et al. (Voronkina), 32 Zhur. Obschchei Khim 2098-101 (1962)

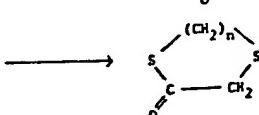
The examiner contended that the three procedures were suggested by analogy to specific reactions disclosed in Howard, Miller, and Addor IV, respectively. With the prior art reactions said to suggest them, the procedures can be summarized:

#### HOWARD ANALOGY:

##### STEP I



##### (Analogous)

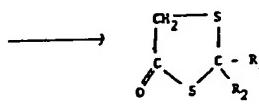


#### MILLER ANALOGY:

##### STEP I



##### (Analogous)

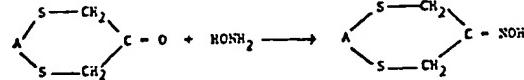


#### HOWARD ANALOGY

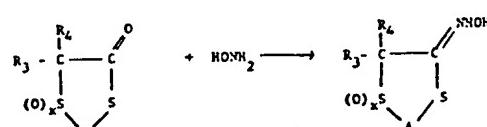
#### MILLER ANALOGY

##### STEP II

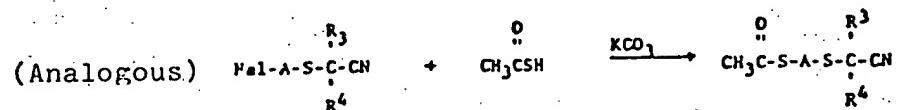
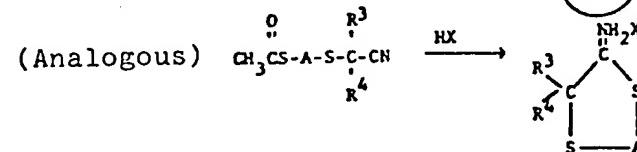
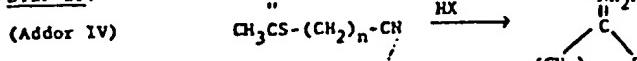
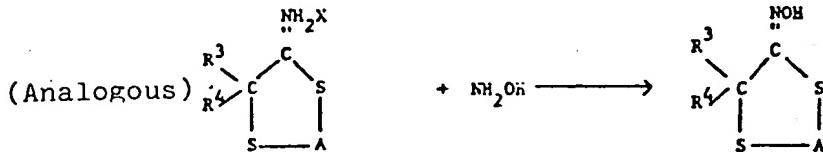
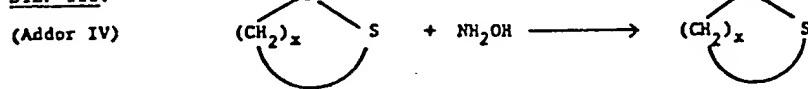
##### (Addor II)



##### (Analogous)



\* Oximes are compounds containing the radical  $\text{C}=\text{N}-\text{O}-\text{H}$ .

ADDOR IV ANALOGYSTEP I:STEP II:STEP III:

Williamson discloses the nitrile substituted starting materials used in Step I of the Addor IV analogy. The other references cited on remand, were said to teach alternative methods for obtaining the substituted nitrile starting materials.

**Issues**

The issues are:

(1) Whether prima facie obviousness is present for each claim,

(2) Whether the prior art provides an enabling disclosure, i.e., whether it disclosed or would have rendered obvious a method of preparing the claimed compounds, and

(3) Whether prima facie obviousness, if present, has been rebutted.

**Opinion***(1) Obviousness*

[1] An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties. In re Gyurik, 596 F.2d 1012, 1018, 201 USPQ 552, 557 (CCPA 1979); See In re May, 574 F.2d 1082, 1094, 197 USPQ 601, 611 (CCPA 1978); In re Hoch, 57 CCPA 1292, 1296, 428 F.2d 1341, 1344, 166 USPQ 406, 409 (1970). Because of the close structural similarity between the claimed compounds at issue here and the compounds of Addor I, II, and III, Ghosh, and Nikles, and because those prior art compounds possess pesticidal activity, we conclude that the required

motivation is present here. See *In re Wood*, 582 F.2d 638, 641, 199 USPQ 137, 139 (CCPA 1978). When prior art compounds essentially "bracketing" the claimed compounds in structural similarity are all known as pesticides; one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new pesticides.

[2] Payne points to an absence of a true isomeric or homologous relationship between the prior art and claimed compounds. However, as the board correctly noted, this court has held that "[t]he name used to designate the relationship between related compounds is not necessarily controlling; it is the closeness of that relationship which is indicative of the obviousness or unobviousness of the new compound." *In re Druey*, 50 CCPA 1538, 1541, 319 F.2d 237, 240, 138 USPQ 39, 41 (1963); See *In re Herr*, 50 CCPA 705, 708, 304 F.2d 906, 909, 134 USPQ 176, 178 (1962). The similarity in chemical structures and properties between the prior art and claimed compounds is sufficiently close to support a *prima facie* case of obviousness. The only structural difference is that the ring structures of the prior art have one or three carbon atoms between two sulfur atoms, whereas the ring structures of the claimed compounds have two carbon atoms between two sulfur atoms, with one of the intervening carbon atoms being part of a carbamoyloximino moiety in each case. Thus the ring structures of the prior art are balanced, with each sulfur atom linked either directly to the carbamoyloximino moiety or linked thereto through one carbon atom, whereas the ring structures of the claimed compounds are unbalanced, with one sulfur atom linked directly to the carbamoyloximino moiety and the other sulfur atom linked thereto through one carbon atom.

[3] Payne attacks the conclusion of structural obviousness, pointing to theoretical differences in the oxidation states of the two ring sulfur atoms and carbamoyloximino carbon atom of the claimed compounds from those of the prior art. We agree with the board's statement that those theoretical differences do not defeat obviousness:

[T]he prior art discloses two classes of related compounds, one with a single oxime substituted carbon atom between two ring sulfur atoms and the other with three intermediate carbons. The oxidation states of the substituted carbon atoms and the ring sulfur atoms are clearly different in the two classes of compounds yet both are known to exhibit pesticidal activity.

[4] The differences in the number and location of carbon atoms relative to the sulfur atoms among the compounds of the prior art references indicate that there would be a difference in oxidation state of each carbon and sulfur atom. Appellants' burden, however, is not merely to point out that differences in oxidation state exist, but to show that the oxidation states of the atoms in his compounds were different from what the prior art would have suggested.

#### (2) Enablement

[5] References relied upon to support a rejection under 35 USC 103 must provide an enabling disclosure, i.e., they must place the claimed invention in the possession of the public. *In re Brown*, 51 CCPA 1254, 1259, 329 F.2d 1006, 1011, 141 USPQ 245, 249 (1964). An invention is not "possessed" absent some known or obvious way to make it. *In re Hoeksema*, 55 CCPA 1493, 1500, 399 F.2d 209, 274, 158 USPQ 596, 601 (1968). Hence, the presumption of obviousness based on close structural similarity is overcome where the prior art does not disclose or render obvious a method for making the claimed compound. *Id.* at 1500, 399 F.2d at 274, 158 USPQ at 601. It can be assumed that the method disclosed for making the reference compound would provide those skilled in the art with a method for making the structurally similar claimed compounds. *In re Grose*, 592 F.2d 1161, 1168, 201 USPQ 57, 63 (CCPA 1979). However, the PTO can properly rely on additional references. Cf. *In re Samour*, 571 F.2d 559, 562-63, 197 USPQ 1, 4 (CCPA 1978). Moreover, the method suggested by the prior art need not be that disclosed by the applicant. *In re Maloney*, 56 CCPA 1218, 1221-23, 411 F.2d 1321, 1323-25, 162 USPQ 98, 100-02 (1969).

[6, 7] In the present case, Payne labelled the examiner's suggested methods a "[s]peculative reconstruction of prior art processes" used to make "a series of intermediate compounds never before imagined or made." Step I of the Miller analogy differs from the Miller reaction only in the substitution of a sulphur atom for an oxygen atom in the acid starting material.<sup>7</sup> The use

<sup>7</sup> In view of our holding respecting the Miller analogy, we need not consider the sufficiency of the examiner's Howard or Addor IV analogies, or the board's refusal to consider Payne's May 23, 1978 Reply to the Examiner's Answer on Remand, that Answer and Reply being directed solely to the Addor IV analogy. If there be in the board's opinion an implication that absence of a reply brief is construable as a concession, however, that implication would be insupportable.

of new starting material or the obtaining of new resultant compounds is never alone sufficient to render unobvious a method otherwise analogous to that of the prior art. *In re Kanter*, 55 CCPA 1395, 1397-98, 399 F.2d 249, 251, 158 USPQ 331, 332-33 (1968). We find the Miller analogy sufficiently suggested by the prior art to place within the possession of the public a method for making Payne's compounds. Thus, the PTO met its burden of establishing a prima facie case of enablement.

The burden thus shifted to Payne to present "reason or authority for believing" that the examiner's analogies would be inoperable. *In re Hoeksema*, *supra* at 1501, 399 F.2d at 274-75, 158 USPQ at 601; *In re Ross*, 49 CCPA 1276, 1280, 305 F.2d 878, 881, 134 USPQ 320, 322 (1962). Attempting to carry that burden against the Miller analogy, Payne argues that (1) the reactivity of the thioacid used in step I was so inferior to that of Miller's carboxylic acid that it would be incapable of reacting with the ketone to form a ring, and (2) the hydroxylamine taught by Addor II and Ghosh as successfully reacting with stable thioether ketones would, when used in step II of the analogy, act as such a strong hydrolyzing agent that it would cleave the relatively unstable thioether-thioester ring.

[8] Arguments of counsel unsupported by competent factual evidence of record are entitled to little weight. *In re Lindner*, 59 CCPA 920, 923, 457 F.2d 506, 508, 173 USPQ 356, 358 (1972). To successfully rebut the examiner's prima facie case of enablement, it was incumbent upon Payne to introduce affidavits or other factual evidence in support of his position. *In re Hoeksema*, *supra* at 1501, 399 F.2d at 275, 158 USPQ at 601. Facts, such as test data demonstrating inoperativeness of the Miller analogy, or facts set forth in an affidavit (37 CFR 1.132) of an expert in the field suggesting that inoperativeness, would be highly probative. *In re Aufhauser*, 55 CCPA 1477, 1485, 399 F.2d 275, 282, 158 USPQ 351, 356 (1968); *In re Hoeksema*, *supra* at 1501, 399 F.2d at 275, 158 USPQ at 601; *In re Fay*, 52 CCPA 1483, 1489-90, 347 F.2d 597, 603, 146 USPQ 47, 51 (1965). Payne having presented no such evidence, the examiner's prima facie case of enablement must stand.

#### (3) Rebuttal Evidence

[9] A prima facie case of obviousness based on structural similarity is rebuttable by proof that the claimed compounds possess unexpectedly advantageous or superior properties. *In re Papesch*, 50 CCPA 1084, 1091-92, 315 F.2d 381, 386-87, 137 USPQ

43, 47-48 (1963). Direct or indirect comparative testing between the claimed compounds and the closest prior art may be necessary. *In re Merchant*, 575 F.2d 865, 869, 197 USPQ 785, 788 (CCPA 1978); *In re Blondel*, 499 F.2d 1311, 1317, 182 USPQ 294, 298 (CCPA 1974); *In re Swentzel*, 42 CCPA 757, 763, 219 F.2d 216, 220, 104 USPQ 343, 346 (1955). Contrary to the board's apparent suggestion, an applicant need not test compounds taught in each and every reference. *In re Holladay*, 584 F.2d 384, 386, 199 USPQ 516, 518 (CCPA 1978). However, where an applicant tests less than all the cited compounds, the test must be sufficient to permit a conclusion respecting the relative effectiveness of applicant's claimed compounds and the compounds of the closest prior art. *In re Holladay*, *supra* at 386, 199 USPQ at 518. *In re Merchant*, *supra* at 869, 197 USPQ at 787-88. Payne's tests are insufficient to permit that conclusion.

[10, 11] Table II and the data on the "Applicants-5" compound in Table V of the Durden affidavit reflect comparative testing between five of Payne's claimed compounds and one compound taught by Addor I.<sup>10</sup> The Addor I compounds proved superior in activity against aphid and housefly. Payne's compounds proved superior in activity against mite, armyworm, and bean beetle. A finding of obviousness is not precluded, however, when only some, but not all, of the properties of a claimed compound are predictable from the prior art. See *In re Murch*, 59 CCPA 1277, 1283, 464 F.2d 1051, 1056, 175 USPQ 89, 92 (1972).

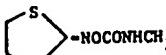
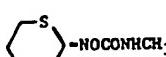
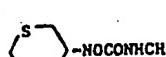
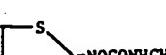
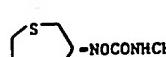
[12] The tested Addor I compound must be applied at 230 ppm to achieve an LD rating against all the pests tested. The least effective of Payne's tested compounds need be applied at only 140 ppm to achieve that result. That superior broad spectrum

<sup>10</sup> The compounds labeled "Applicants-1", "Applicants-2", "Applicants-4", and "Applicants-5" correspond to the compounds recited in species claims 8, 9, 6, and 10 respectively. No test data are provided for any compound of sub-generic claim 4, for the compounds of species claims 7, 11, and 12 or for many of the classes of compounds within generic claim 1 and sub-generic claims 2, 3, and 5. Table I in Payne's specification demonstrates a wide disparity in the pesticidal effectiveness of his compounds; suggesting that no conclusions can be drawn respecting the effectiveness of untested compounds. Hence, Payne's evidence is not commensurate in scope with claims 1-5, 7, 11, and 12 and cannot overcome the rejection of those claims. See *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978).

pesticidal activity would not have been predictable from Addor I."<sup>11</sup>

[13] Were Addor I, the only relevant prior art, Payne's evidence may have been sufficient. Payne may not, however, rely on his mere assertion that the Addor I compound is "representative and superior in pesticidal properties to the compounds described in

Addor II, Addor III, Ghosh and Nikles." None of the latter, allegedly inferior, compounds was tested. The assertion is based on data in the references and on Table III data relating to compounds allegedly "analogous" to those described in Addor II and Ghosh. A summary of relevant toxicity data in the references and the Durden test data reads:

Compound	Insect Toxicity (LD <sub>50</sub> , ppm)				
	Aphid	Hive	Armyworm	Bean Beetle	Housefly
	~1	90	160	230	0.7
ADDOR-I					
	10 (LD <sub>95</sub> )	-	-	-	-
ADDOR-II					
	-	-	1000 (LD <sub>100</sub> )	-	-
ADDOR-III					
	10 (LD <sub>90</sub> )	-	100 (LD <sub>40</sub> )	-	-
ADDOR-III					
	1000 (LD <sub>90</sub> )	1000 (LD <sub>90</sub> )	-	-	-
CHOSH					
	-	400 (LD <sub>80</sub> )	400 (LD <sub>100</sub> )	-	-
NIKLES					

Payne's data indicate that most compounds are far less effective against armyworm and bean beetle than they are against aphid, mite and housefly. However, he supplies no data respecting the effectiveness of the Addor III and Nikles com-

"That a direct linear analog of Payne's "Applicants-5" compound lacks broad spectrum activity (Table V) lends support to Payne's assertion that the claimed compounds yield unexpected results. The board's statement that Tables III through V of the Durden affidavit were "of no evidentiary value for purposes of rebutting the \* \* \* *prima facie* case of obviousness," (emphasis the board's) must be interpreted as indicating that that relevant evidence was entitled to very little weight, In re Mageli, 470 F.2d 1380, 1383, 176 USPQ 305, 307 (CCPA 1973), in view of the closer prior art cited.

pounds against bean beetle. Nor does Payne suggest a technique, and none is apparent from the record, for inferring that effectiveness from data relating to other pests.<sup>12</sup>

The data on effectiveness of the compounds of Addor I, Addor III and Nikles against armyworm is inconclusive. The data from Addor I relates only to LD<sub>50</sub>: Addor III teaches that 100 ppm of his compound is required to achieve an LD<sub>50</sub> rating against armyworm, but provides no indication of

<sup>12</sup> The "Applicants-3" and "Applicants-4" compounds, for example, are roughly equivalent in effectiveness against bean beetle but differ widely in effectiveness against aphid, mite and armyworm.

the concentration needed to achieve LD<sub>50</sub>.<sup>13</sup> On this record, therefore, the Addor I compound may be as effective against armyworm as Payne's "Applicants-5" compound. Nikles teaches that 400 ppm of his compound will achieve an LD<sub>100</sub> rating against armyworm. The 400 ppm is not described as a minimum concentration and there is no indication that a lower concentration would not achieve LD<sub>100</sub>. Absent additional data, no meaningful conclusion is possible respecting the relative effectiveness against armyworm of the Addor I and Nikles compounds.

Payne's reliance on an allegedly unexpected broad spectrum activity of his compounds, as evidencing their nonobviousness, must therefore fail in the absence of comparative broad spectrum tests of Nikles' compounds.

Moreover, unlike Addor I, Nikles suggests that his compound possesses broad spectrum activity. Nikles expressly teaches that his compounds "have a surprising range of biological activity, as is observed \* \* \* in the far-reaching control of pests." Nikles conducted successful tests of his compounds against mite and armyworm. His specification states that his compounds are also effective against "houseflies, aphids, caterpillars and beetles." Thus, a person skilled in the art would expect Nikles, not Addor I, to be more representative of the broad spectrum activity of prior art compounds, and Payne's tests of Addor I are insufficient to permit a conclusion respecting the relative broad spectrum effectiveness of the claimed compounds and those of Nikles.

#### *Conclusion*

Payne having failed to rebut the PTO's prima facie case of obviousness, the rejection of claims 1-12 is *affirmed*.

*Affirmed.*

<sup>13</sup> Addor I teaches that 10 ppm of his compound achieves an LD<sub>95</sub> rating against aphid. Durden's Table II indicates approximately 1 ppm of the Addor I compound achieves an LD<sub>50</sub> rating. Nikles teaches that a concentration of 5 ppm of his compound achieves an LD<sub>50</sub> rating, and 10 ppm achieves an LD<sub>100</sub> rating, against houseflies.

#### District Court, S. D. New York

CTS Corporation  
v. Electro Materials Corp. of America  
No. 70 Civ. 433  
Decided Aug. 16, 1979

#### PATENTS

##### 1. Costs — Attorney's fees (§25.5)

Power to award attorney's fees under 35 U.S.C. 285 is in derogation of common law and should be strictly construed; basic rationale behind Section 285 is compensatory, not punitive, and major purpose of Section is to compensate prevailing party for monies spent that it would not have had to spend but for losing party's misconduct.

##### 2. Costs — Attorney's fees (§25.5)

Amounts charged for services of individuals not admitted to practice of law at time services were rendered may not be compensated as attorney fees, within meaning of 35 U.S.C. 285; attorney's fees that will be awarded are set in contemplation of secretarial and other overhead expenses, but to extent that such costs are separately stated and attributed to services of non-lawyers, they may not be recovered under Section 285.

Action by CTS Corporation, against Electro Materials Corp. of America, for patent infringement, in which defendant counterclaims for declaration of patent invalidity and noninfringement. On defendant's application for attorneys' fees. Application granted, in part.

See also 202 USPQ 22.

Mason, Kolehmainen, Rathburn & Wyss, Chicago, Ill., and Gilbert, Segall & Young, New York, N.Y. (Walther E. Wyss, Warren D. McPhee, and Joseph Krieger, all of Chicago, Ill., and Bernard J. Rosenthal, New York, N.Y., of counsel) for plaintiff.

Amster & Rothstein, New York, N.Y. (Alfred B. Engelberg and Daniel Ebenstein, both of New York, N.Y., of counsel) for defendant.

Cannella, District Judge.

Defendant's application for attorneys' fees is granted, in part. Plaintiff is directed to compensate defendant in the amount of \$306,532. 35 U.S.C. §285.

In the Opinion filed herein on February 26, 1979, the Court awarded attorneys' fees

to defendant Electro Materials Corp. of America ("EM" submit a fee application not agree on an amount. EM submitted compensation for its attorneys' fees connection with this litigation was opposed by plaintiff ("CTS"). CTS supplemented their submissions as directed by the Court dated June 15, 1979; these submissions proceedings herein following ruling.

[1] Initially, the Court notes that the statutory purpose of attorney's fees, 35 U.S.C. §285, is to provide compensation for common law and should be strictly construed. See Larchmont Toggenburg Ski Corporation v. 170 USPQ 241 (2d Cir. 1979), where both the parties and Judge Newcomer's purpose:

The basic ratio of attorney's fees is compensatory, not punitive. The purpose of the Section 285 is to provide compensation for the prevailing party for expenses incurred in litigating the case, but not for the conduct of the losing party.

Mueller Brass Co. Inc., 352 F.Supp. 1361, 379 (E.D. Pa. 1973); see Louis M. Goldfarb Corp., 453 F.Supp. 277, 281-282 (S.D.N.Y. 1978).

As to the specific application, the Court notes that attorney's fees are not recoverable for expenses incurred in litigating the case, but not for the conduct of the losing party. The expenses will be reimbursed in a post-judgment bill of costs. 28 U.S.C. §285(d). The Court notes that EMCA's suggestion that attorney's fees be set in contemplation of overhead expenses is not supported by the statute. The purpose would be served if the fees were set in contemplation of overhead expenses.

[2] Second, the Court notes that the statute allows the \$11,830 maximum fee to be applied to individuals who are not engaged in the practice of law at the time services were rendered. As EMCA is not engaged in the practice of law at the time services were rendered, the Court awards attorney's fees in the amount of \$11,830.

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